

Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1. (Original) A method for improving channel efficiency in a broadband communication system that complies with a Data Over Cable Service Interface Specification (DOCSIS) standard, comprising:

establishing a logical channel for communication between a first device that supports at least one proprietary communication parameter associated with bandwidth utilization and other devices that support said at least one proprietary communication parameter;

receiving registration information from a second device, wherein said registration information indicates that said second device supports said at least one proprietary communication parameter; and

assigning said second device to said logical channel in response to receiving said registration information.

2. (Original) The method of claim 1, wherein said first device comprises a cable modem termination system (CMTS) and said second device comprises a cable modem.

3. (Original) The method of claim 1, wherein said at least one proprietary communication parameter comprises a modulation rate.

4. (Original) The method of claim 1, wherein said at least one proprietary communication parameter comprises a base rate.

5. (Original) The method of claim 1, wherein said at least one proprietary communication parameter comprises an alpha value.

6. (Original) The method of claim 1, wherein said establishing a logical channel comprises generating an Upstream Channel Descriptor (UCD) message, wherein said UCD message includes said at least one proprietary communication parameter.

7. (Original) The method of claim 6, wherein said generating a UCD message comprises generating a UCD message having a version field or a type field that comprises a value not provided for by the DOCSIS standard.

8. (Original) The method of claim 6, wherein said establishing a logical channel further comprises sending said UCD message only to devices that support said at least one proprietary communication parameter.

9. (Original) The method of claim 8, wherein said sending said UCD message only to devices that support said at least one proprietary communication parameter comprises:

accessing a database of identifiers of devices that support said at least one proprietary communication parameter; and

generating a unicast UCD message addressed to each of said devices having an identifier in said database.

10. (Original) The method of claim 8, wherein said sending said UCD message only to devices that support said at least one proprietary communication parameter comprises:

accessing an identifier that identifies a plurality of devices that support said at least one proprietary communication parameter; and

generating a multicast UCD message addressed to said plurality devices identified by said identifier.

11. (Original) The method of claim 1, wherein said receiving said registration information from a second device comprises:

sending a first unicast message to said second device to determine if said second device implements any proprietary features;

receiving a message from said second device, wherein said message indicates support by said second device for said at least one proprietary communication parameter; and

sending a second unicast message to said second device, wherein said second unicast message indicates support by said first device for said at least one proprietary communication parameter.

12. (Original) The method of claim 1, wherein said assigning said second device to said logical channel comprises generating a unicast message to said second device identifying said logical channel.

13. (Original) A cable modem termination system (CMTS) for improving channel efficiency in a cable modem system that complies with a Data Over Cable Service Interface Specification (DOCSIS) standard, comprising:

an upstream channel manager adapted to establish a logical channel for communication with cable modems that support at least one proprietary communication parameter associated with bandwidth utilization; and

a registration module adapted to receive registration information from a cable modem, wherein said registration information indicates that said cable modem supports said at least one proprietary communication parameter, and to assign said cable modem to said logical channel in response to receiving said registration information.

14. (Original) The CMTS of claim 13, wherein said at least one proprietary communication parameter comprises a modulation rate.

15. (Original) The CMTS of claim 13, wherein said at least one proprietary communication parameter comprises a base rate.

16. (Original) The CMTS of claim 13, wherein said at least one proprietary communication parameter comprises an alpha value.

17. (Original) The CMTS of claim 13, wherein said upstream channel manager is adapted to determine whether or not to establish said logical channel.

18. (Original) The CMTS of claim 13, wherein said upstream channel manager is adapted to generate a UCD message that includes said at least one proprietary communication parameter.

19. (Original) The CMTS of claim 18, wherein said upstream channel manager is adapted to generate a UCD message having a version field or a type field that comprises a value not provided for by the DOCSIS standard.

20. (Original) The CMTS of claim 18, wherein said upstream channel manager is further adapted to send said UCD message only to cable modems that support said at least one proprietary communication parameter.

21. (Original) The CMTS of claim 20, wherein said upstream channel manager is adapted to access a database of identifiers of cable modems that support said at least one proprietary communication parameter, and to generate a unicast UCD message addressed to each of said cable modems having an identifier in said database.

22. (Original) The CMTS of claim 20, wherein said upstream channel manager is adapted to access an identifier that identifies a plurality of cable modems that support said at least one proprietary communication parameter, and to generate a multicast UCD message addressed to said plurality devices identified by said identifier.

23. (Original) The CMTS of claim 13, wherein said registration module is adapted to send a first unicast message to said cable modem to determine if said cable modem implements any proprietary features, to receive a message from said cable

modem, wherein said message indicates that said cable modem supports said at least one proprietary communication parameter, and to send a second unicast message to said cable modem, wherein said second unicast message indicates that said CMTS supports said at least one proprietary communication parameter.

24. (Original) The CMTS of claim 13, wherein said registration module is adapted to generate a unicast message to said cable modem identifying said logical channel.

25. (Original) A computer program product comprising a computer useable medium having computer program logic recorded thereon for enabling a processor to facilitate communication between devices in a broadband communication system that complies with a Data Over Cable Service Interface Specification (DOCSIS) standard, said computer program logic comprising:

means for enabling the processor to establish a logical channel for communication between a first device that implements at least one proprietary communication parameter associated with bandwidth utilization and other devices that support said at least one proprietary communication parameter;

means for enabling the processor to receive registration information from a second device, wherein said registration information indicates that said second device supports said at least one proprietary communication parameter; and

means for enabling the processor to assign said second device to said logical channel in response to receiving said registration information.

26. (Original) The computer program product of claim 25, wherein said first device comprises a cable modem termination system (CMTS) and said second device comprises a cable modem.

27. (Original) The computer program product of claim 25, wherein said at least one proprietary communication parameter comprises a modulation rate.

28. (Original) The computer program product of claim 25, wherein said at least one proprietary communication parameter comprises a base rate.

29. (Original) The computer program product of claim 25, wherein said at least one proprietary communication parameter comprises an alpha value.

30. (Original) The computer program product of claim 25, wherein said means for enabling the processor to establish a logical channel comprises means for enabling the processor to generate an Upstream Channel Descriptor (UCD) message, wherein said UCD message includes said at least one proprietary communication parameter.

31. (Original) The computer program product of claim 30, wherein said means for enabling the processor to generate a UCD message comprises means for enabling the processor to generate a UCD message having a version field or a type field that comprises a value not provided for by the DOCSIS standard.

32. (Original) The computer program product of claim 30, wherein said means for enabling the processor to establish a logical channel further comprises means for enabling the processor to send said UCD message only to devices that support said at least one proprietary communication parameter.

33. (Original) The computer program product of claim 32, wherein said means for enabling the processor to send said UCD message only to devices that support said at least one proprietary communication protocol comprises:

means for enabling the processor to access a database of identifiers of devices that support said at least one proprietary communication protocol; and

means for enabling the processor to generate a unicast UCD message addressed to each of said devices having an identifier in said database.

34. (Original) The computer program product of claim 32, wherein said means for enabling the processor to send said UCD message only to devices that support said at least one proprietary communication parameter comprises:

means for enabling the processor to access an identifier that identifies a plurality of devices that support said at least one proprietary communication parameter;

means for enabling the processor to generate a multicast UCD message addressed to said plurality devices identified by said identifier.

35. (Original) The computer program product of claim 25, wherein said means for enabling the processor to receive said registration information from a second device comprises:

means for enabling the processor to send a first unicast message to said second device to determine if said second device implements any proprietary features;

means for enabling the processor to receive a message from said second device, wherein said message indicates support by said second device for said at least one proprietary communication parameter; and

means for enabling the processor to send a second unicast message to said second device, wherein said second unicast message indicates support by said first device for said at least one proprietary communication parameter.

36. (Original) The computer program product of claim 25, wherein said means for enabling the processor to assign said second device to said logical channel comprises means for enabling the processor to generate a unicast message to said second device identifying said logical channel.